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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/785,565

02/23/2004

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510.1057

9824

23280 7590 10/20/2008
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EXAMINER

FANTU, YALKEW

ART UNIT

PAPER NUMBER

2838

MAIL DATE

DELIVERY MODE

10/20/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/785,565	Applicant(s) ASHTIANI ET AL.	
	Examiner YALKEW FANTU	Art Unit 2838	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 June 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 5, 6, 9, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujii (US 5,663,628) in view of Yoshikawa et al (US 6,317,697).

With respect to claim 1, Fujii discloses a method of determining the deterioration of a battery (Fig. 1), charge and discharge cycles of the battery are measured by number and depth of the charge discharge; (Fig. 6; Col. 11, lines 54-58); a characteristic deterioration value is determined for each of the charge and discharge cycles on the basis of a deterioration curve (Fig. 4), but does not expressly disclose individual characteristic deterioration values are summed up (a sum of "some" includes summing one value) to obtain the deterioration of the battery (Col. 10, lines 1-23).

Yoshikawa, however, discloses and individual characteristic deterioration values are, at least summed up (the totalizer section 56 of fig. 2 or 5 sums up deterioration characteristics value such as, capacity, discharge values etc., see also col. 9, lines 29-34 and F6).

Fujii and Yoshikawa are analogous arts because they are from the same field of endeavor namely Battery life determination and battery discharge system.

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At the time of the invention it would have been obvious to a person having ordinary skill in the art to provide individual characteristics deterioration value and their sum as taught by Yoshikawa to the battery system of Fujii to determine and optimize the life of the rechargeable battery. The reason is that measuring characteristic values and summing up the total values of individual characteristics helps obtain deterioration of a specific battery.

With respect to claim 2, Yoshikawa discloses each partial cycle of charging and discharging measured separately, the characteristic deterioration value being determined for each of the partial cycles (Fig. 6), and values for all partial cycles being, at least some, summed up (Col. 18, lines 56-64); and charge and discharge cycles of the battery are measured by number and depth of discharge (Col. 8, lines 20-25), and characteristic deterioration value is determined for each charge and discharge cycles (Col. 15, 35-37).

Regarding claims 3 and 9, Fujii discloses the dependency of the characteristic (Col. 11, line 54) deterioration values on the depth discharge (Col. 11, line 55) is defined the respective battery type (Col. 10, lines 5-10) by the deterioration curve as a continuous function (Fig. 6 and 7).

Regarding claims 5 and 11, the deterioration curve (Fig. 29A) is adapted to the conditions prevailing in the region of the battery using weighting factor (Fig. 15).

With respect to claims 6 and 12, the weighting factors are dependent on the temperature (Col. 15, lines 40-41).

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Claims 4 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujii (US 5,663,628) in view of Yoshikawa further in view of Seri et al. (US 5,994,877).

With respect to claims 4 and 10, Fujii and Yoshikawa disclose a method of determining the deterioration of a battery, where a charge and discharge cycles of the battery are measured by number and depth of the discharge, however do not disclose the depth of discharge defined for battery type by the deterioration curve of approximate intervals. Seri et al. reference, however, teaches that the depth of discharge is defined for different battery type by the deterioration curve, which is adapted to the respective battery type (Col 6, lines 46-52).

Fujii, Yoshikawa and Seri et al. are analogous art because they are from the same field of endeavor namely battery life determination methods.

At the time of invention, it would have been obvious to a person of ordinary skill in the art to have added weighting factor dependency to the discharge current of Fujii in view of the teaching of Seri et al. The suggestion and motivation for doing so would have been obvious in view of the teachings of Seri et al. that by adding the dependency relationship of current to that of a weighting factor help to determine the deterioration of a battery.

Claims 7, 8 and 13-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujii (US 5,663,628) and Yoshikawa (US 6,317,697) as applied to the claims above, and further in view of Kinoshita (US 5,703,469).

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Regarding claims 7, 8 and 13 - 20 Fujii discloses a method of determining the deterioration of a battery, where a charge and discharge cycles of the battery are measured by number and depth of the discharge, and Yoshikawa discloses the deterioration curve is adapted to the conditions prevailing in the region of the battery using weighting factor as set forth in rejection above, however, both Fujii and Yoshikawa do not teach:

Regarding claims 7, 8, 13 and 14, that the weighting factors are dependent on discharge current Seri et al. reference, however, teaches dependency on the discharge current (Col. 6, lines 46-52).

With respect to claims 15 and 18, that the discharge cycles with capacity efficiency are considered within a predetermined limit. Seri et al. reference teaches that the discharge capacity throughput considered with in a predetermined limit. (Col. 3, lines 11-15; col. 4, lines 15-20)

At the time of invention, it would have been obvious to a person of ordinary skill in the art to have added weighting factor dependency on the discharge current, and that the discharge cycles with capacity efficiency are considered within a predetermined limit so that the method would consider the characteristic factors that have impact in determining battery deterioration.

Regarding claims 16, 17, 19 and 20, Fujii discloses a method of determining the deterioration of a battery, where a charge and discharge cycles of the battery are measured by number and depth of the discharge, and Yoshikawa discloses the

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deterioration curve is adapted to the conditions prevailing in the region of the battery using weighting factor as set forth in the 35 USC 102 rejection above, however, both Fujii and Yoshikawa do not teach a battery that is used in a motor vehicle for supplying electric power to electronic auxiliary components, and to propulsion components.

The Kinoshita reference, however, teaches a battery which is mounted as an energy source on an electrically propelled vehicle. (Col. 1, lines 10-12), and it is obvious for one skilled in the art to supply electric power, as described in this reference, to an electronic component of the above-mentioned vehicle.

Fujii, Yoshikawa, and Kinoshita are analogous art because they are from the same field of endeavor namely battery life determination methods.

It would have been obvious to a person of ordinary skill in the art, at the time of this invention, to add a battery used for supplying electric power to propulsion and electronic auxiliary components.

The suggestion and motivation for doing so would have been obvious in view of the teachings of Kinoshita that by adding a battery that is used in a motor vehicle for supplying electric power to electrically propelled vehicle components and electronic components, Fuji's method of determining battery deterioration could also be used for determining battery deterioration of a motor vehicle that supplies electric power to its propulsion and electronic components as specified in the above claims.

Response to Arguments

Applicant's arguments filed on 06/23/2008 have been considered but are ineffective to overcome the Fujii, Yoshikawa and Sri references. (See the rejection above).

Applicant argues that Fujii reference does not disclose "...DETERMINING A RESPECTIVE characteristic deterioration value for at least some of the charge and discharge cycles... summing the determined characteristic deterioration values..." Fujii, however, discloses determining characteristic deterioration value of the charge and discharge cycle (fig. 6) plurality of depths of discharge (col. 11, lines 54-59)... fig. 4, col. 10, lines 1-8 sums up characteristics showing discharge currents (having different values of currents) and duration of various batteries (indicates that discharge currents are some of characteristics); Besides Yoshikawa discloses and individual characteristic deterioration values are, at least summed up (the totalizer section 56 of fig. 2 or 5 sums up deterioration characteristics value such as, capacity, discharge values etc., see also col. 9, lines 29-34 and F6). Fig. 4 of Fujii reference 3 shows characteristics (having different values) of discharges for lithium batteries summed up in a single graph). Characteristics, such as current values, are summed up to form a graph that shows discharge characteristic to obtain deterioration of battery (fig. 4, which illustrate different discharge rates... help find characteristic deterioration values; see also col. 10, 1-20).

Applicant argues that Yoshikawa reference does not teach, "... measuring respective number of charge and discharge cycles at a plurality of depth of discharge of the battery". Yoshikawa, on the other hand, discloses charge and discharge cycles at a plurality of depths of discharge of the battery (col. 15, 35-39) and as for measuring the cycles, the discharge amount is measured by the measurement part of fig. 5, 561 before summed-up in totalizer section 56.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to YALKEW FANTU whose telephone number is (571)272-8928. The examiner can normally be reached on M - F: 7- 4.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Akm E. Ullah can be reached on 571-272-2361. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Gary L. Laxton/
Primary Examiner
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10/14/2008